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ABSTRACT

Curriculum innovation and research in the dental medicine field is addressed as a major area of concern to those faced with pressures to provide more efficient and effective health care services. A survey was undertaken to determine (1) the type of training and background desired and (2) recruitment procedures and employment prospects for persons deliberately trained to work within the general area of educational research in the health professions. A four-page questionnaire was sent to the deans of the 57 accredited dental schools in the U.S. and responses were obtained from 55. Parts I and II of the questionnaire asked for ratings of the importance of studies in educational psychology, statistical analysis, measurement, the design of research and related areas (e.g., the development of funding proposals) using a five point Likert-type scale, with categories ranging from "irrelevant" to "imperative." Part III of the instrument dealt with the utilization of graduates of an educational research training program. Over 45% of the responses indicated that knowledge of specific topics was imperative, with only one response indicating that a topic was irrelevant. The results also suggest that a rather conventional doctoral level preparation in research methodology, with supporting work in curriculum and instructional materials development, is regarded as optimal preparation by the majority of deans responding. (LBH)

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DESIRED COMPETENCIES AND EMPLOYMENT PROSPECTS FOR EDUCATIONAL RESEARCH PERSONNEL IN SCHOOLS OF DENTAL MEDICINE

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DESIRED COMPETENCIES AND EMPLOYMENT PROSPECTS FOR EDUCATIONAL RESEARCH PERSONNEL IN SCHOOLS OF DENTAL MEDICINE [1-2]

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INTRODUCTION

That the health professions are facing ever-mounting pressures to provide more efficient and effective health care services has been emphasized in the Carnegie Commission report "Higher Education and the Nation's Health." (1970)

Among the responsibilities with which university health centers are charged are

> "...To cooperate with other agencies in helping to develop more effective health care delivery systems in their communities and surrounding areas... To expand their medical and dental programs to achieve acceleration and improved efficiency in these programs, and to introduce other curriculum reforms along the lines recommended in this report... To develop more effective integrated educational programs for the total health care teams, including new specialties where needed, such as physician's associates and assistants, and to cooperate in the development of educational programs for allied health specialties conducted in comprehensive colleges and community colleges... To undertake extensive research, in cooperation with appropriate university departments (economics, sociology, psychology, political science, etc.) on health care delivery systems." (pp. 91-92)

It is apparent that there are two major areas of concern: health care delivery systems, and curricular innovation and research. The present study concerns itself primarily with persons who would be prepared for careers in the latter area -- curriculum innovation and research, specifically within the field of dental medicine.

Chambers (1974) in an informal survey of the backgrounds of twelve "veteran behavioral scientists" employed in educational research positions in dental schools found only three people formally prepared for their careers. The remainder mentioned "circumstances" as figuring in the decision to enter the field. All agreed that their work (which included teaching courses, student counseling, direction of evaluations and research efforts, admissions work, development of proposals and research reports, development of instructional materials and administration) was challenging, and the varied responsibilities of the job provided one of the greatest sources of satisfaction.

As the result of an Ohio State University seminar on "The Role of Medical Education Specialists" a list of functions and competencies was developed for medical education specialists (D'Costa, 1970) which paralleled closely those

1- The census which produced the data of the present study was endorsed by the Division of Educational Measurement, American Dental Association

2- A condensed version of this paper was submitted to the *Journal of Dental Education* in July 1975, accepted in August and given early publication in the December issue.

considered by the present study. The questions dealt with in the present study have an applicability across the health professions, and the problems noted by the Carnegie Commission and by Chambers are not peculiar to any one field.

It is apparent that there is a need for trained persons to work within the general area of educational research in the health professions, to meet the types of responsibilities outlined by the Carnegie Commission. A search of the literature indicated that there has been no deliberate effort to determine the field's perceptions of training and educational requirements, for persons interested in such careers. There have been attempts to update the Caplow and McGee (1958) report on recruiting practices, in academic settings with reference to dental school faculty in general (Till, 1972) and dental hygiene personnel (Keevil, 1973) but no information exists on the employment prospects or recruitment practices used with a relatively new type of faculty member in the dental school, the person responsible for research concerning the education and training of dental students.

A survey was therefore undertaken to accomplish the following objectives, with the expectation that such data could provide the information needed in the planning of an educational research training program.

The objectives of the survey were the determination, within the field of dental medicine, of

a) the type of training and background desired in persons of the type surveyed by Chambers and described (as to function and competency) by D'Costa;

b) recruitment procedures and employment prospects for persons deliberately trained in this fashion;

METHOD

A four page questionnaire was developed and sent to the deans of the 57 accredited dental schools in the United States (Council on Dental Education, 1972). The questionnaire had basically three sections. Parts I and II asked deans (or persons designated by them) to rate the importance of studies in educational psychology, statistical analysis, measurement, the design of research and related areas (e.g. the development of funding proposals) using a five point Likert-type scale, with categories ranging from "irrelevant" to "imperative". There were 24 topics included in the broad areas mentioned above; the topics rated in Part I are listed in Table 1, those rated in Part II are listed in Table 2. Part III of the instrument dealt with the utilization of graduates of an educational research training program, and sought to determine (1) those schools already employing persons whose primary responsibility is research in the education and training of health professions personnel, their title, position, and educational background; (2) the desired type and combination of professional and/or academic degrees desired of graduates of the program described in Parts I and II of the instrument, their prospective title and position; (3) the employment prospects of such trained persons; and (4) the recruitment strategies used by deans in the location of candidates for such positions. The determination of this latter information involved the use of a five point Likert-type scale with ten possible means or strategies for the location and recruitment of candidates. The scale categories

ranged from "definitely would not use" to "definitely would use"; the specific means or strategies are listed in Table 4.

The questionnaire, cover letter and a stamped return envelope was mailed in May 1974. Within a month a return of 42 completed questionnaires, giving a response rate of 75%, was realized. A "second wave" mailing was then made; a final response rate of 55 of the 57 American dental schools was obtained, a rate of return of 96%. Since the present study is based on a census of an entire population, rather than a survey of a sample, inferential statistical analyses are inappropriate. The data are, therefore, presented as descriptive.

RESULTS

As may be seen in Table 1, all sub-areas within all four categories of required studies tended to be weighted as at least advisable. Over 45% of the responses indicated that knowledge of specific topics was imperative, with only one response indicating that a topic was irrelevant. Less than 2½% of the responses showed certain topics were perceived as relevant but unessential. These were concentrated on topic B. (d).

Table 1. Ratings of importance of basic studies topics (to be required of all students) in a typical educational research graduate program

Area and Topic	Rated Importance					
	Irrelevant	Relevant but Unessential	Advisable	Important	Imperative	No Rating
A. Educational psychology						
(a) Study of principles and research in adult human learning emphasizing the development of motor skills	1	0	8	16	30	
(b) Study of principles and research in adult human learning emphasizing the acquisition of information of a cognitive nature	0	0	4	18	33	
(c) Study of basic learning theories	0	3	12	13	27	
B. Research design						
(a) Logical basis for the design of research studies	0	0	4	18	33	
(b) Study of different techniques and approaches to educational research in the health professions (experiments and correlational studies, selection and prediction studies)	0	1	9	21	24	
(c) Ethical considerations in research involving human subjects	0	1	10	13	30	1
(d) Unique types of measurement and/or statistical analysis required for certain types of research (e.g., analysis of time series data, content analysis, critical incident technique)	0	8	15	21	10	1
C. Measurement						
(a) Measurement of the development of motor skills	0	1	7	19	28	
(b) Development of predictors of performance	0	2	2	30	21	
(c) Measurement of achievement in content courses	0	0	2	22	30	1
(d) Measurement of attitudes and other affective variables	0	0	7	23	25	
D. Statistical analysis						
(a) Descriptive techniques (developments of graphs, tables, and other descriptive statistics to aid in summarizing data)	0	1	12	23	19	
(b) Inferential statistics (analysis of data resulting from experimental and survey research to permit inferences and generalizations concerning phenomena studied)	0	1	14	19	21	

The evaluation of topics in related or supporting studies, summarized in Table 2 shows a very heavy emphasis on curriculum and instructional materials development (topics D and E), as well as a relatively strong emphasis on writing ability. None of the four basic areas, covered in Part I and presented again as areas for advanced study in Part II (topics H(a) through H(d)) seems to stand out as being particularly valued for advanced work. If one is justified in generalizing from one example, it seems that studies in "collateral areas" (e.g. G.) are not highly valued; the emphasis seems to be rather clearly a job-related skills and competencies, as opposed to less-clearly relevant topics. This seems to be indicated, also, by the pattern of responses to topics B and C; the emphasis seems to be on the application of computer technology rather than the creation of it.

Table 2. Ratings of importance of related studies topics (electives, optional for all students) in a typical educational research graduate program

Area and Topic	Rated Importance					
	Irrelevant	Relevant but Unessential	Advisable	Important	Imperative	No Rating
A. Studies of grant and funding proposal preparation	2	4	18	22	8	1
B. Studies of existing computer programs and program sets, including use with data	0	8	19	24	4	
C. Studies in computer programing to enable the writing of original programs	4	18	16	12	5	
D. Study of the development and utilization of educational methods and aids such as slide tapes, programed training packages, and audiovisual aids	0	1	12	22	20	
E. Curriculum development, innovation, and implementation	0	0	6	24	25	
F. Technical and research report writing	0	1	16	22	16	
G. Study of the structure of higher education in the United States and Canada	8	23	16	8	0	
H. Advanced study in						
(a) Educational psychology	0	5	9	27	13	1
(b) Research design	0	5	14	26	9	1
(c) Measurement	1	1	13	29	10	1
(d) Statistical analysis	1	5	19	22	7	1

An open-ended "other" category was provided in Part II, wherein deans could specify unlisted areas or topics and their ratings thereof. Two areas stood out in those 20 questionnaires where a response was made to the open-ended category. These were health care delivery systems, mentioned by seven deans, and interpersonal relationships, mentioned by five. Many of the other areas or topics were closely related to interpersonal relationships, and included such topics as teacher evaluation, motivation, management, communications, administration, individualization of instruction and group processes. These were typically mentioned by one or two deans, but seem to indicate that the educational researcher is expected to not only interact with his peers, but may be expected to function as a resource person in the general area of affective relationships with others.

The first question in Part III asked whether there was currently a staff person "whose primary responsibility is research in the education and training of health professions personnel." Twenty-eight deans indicated there was currently such a person, 26 indicated there was not, with one dean failing to answer the question. Three schools had two or more such persons on their staffs, with the additional persons usually occupying part-time or joint positions, usually with a school of education or department of educational psychology. An attempt was made to determine whether there was any consistency in titles and/or positions held by such a person, if present on the staff. There seemed to be no consistency in either title or position, although it seems clear from the titles that the position is typically part of the administrative structure of the school. The vast majority of incumbents possess the degree of Ph.D. (24) or Ed.D. (5). Twenty-five percent of the incumbents possess the Ph.D. in combination with a dental degree (D.D.S. or D.M.D.) The field of doctoral study for incumbents was typically educational psychology (13 of the 28); the remainder were divided between education (8) and psychology (2) with five deans failing to indicate the field within which the doctorate was earned. It is interesting to note that although one may concentrate on the study of research methodology within any of these three fields, no incumbent was described as having pursued doctoral study in educational research methodology, per se.

To determine preferences for degrees or combinations of degrees, deans were presented the four types of degrees listed in Table 3, asked to assume that they did not currently employ an educational researcher, and to indicate probability of employment. They were told to assume there were no negative factors in the person's background, and to consider "any factors you ordinarily would, such as professional status associated with a degree, probable salary requirements and your ability to meet them, interaction with other professionals, and level of competency." The data summarized in Table 3 indicate very clearly a strong preference for the combination of doctoral level preparation in educational research combined with a health professions degree.

Table 3. Rated probability of employment for four types of degree holders

Degree or Combination	Probability of Employment					
	None	Almost None	Maybe	Probably	Definite	No Rating
A. Master's degree only (no health professions degree)	17	19	7	2	1	9
B. Master's degree with health professions degree (e.g., D.M.D., M.A.)	3	3	17	20	5	7
C. Doctorate with no health professions degree	2	2	16	18	12	5
D. Doctorate with health professions degree (e.g., D.M.D., Ph.D.)	0	0	5	14	31	5

Deans were asked to indicate on a continuum from "no probability" to "certain", the probability that they would attempt to recruit a person whose primary responsibility would be "research in the education and training of health professions personnel" during the next 12 months, if they did not currently employ such a person. Of the 26 that responded, ten indicated "maybe", two indicated a 70-75% probability, and four indicated they were certain they would attempt to recruit such a person. Only four indicated no probability existed.

The final area considered involved the evaluation of ten means a dean could employ in the location and recruitment of candidates for an educational research position. Each of the ten means was to be evaluated using a Likert-type scale with categories ranging from "definitely would not use" through "might use" to "definitely would use." The means, categories of use, and evaluations are summarized in Table 4.

Table 4. Ratings of various means which could be utilized in the location and recruitment of candidates

Means	Evaluations					
	Definitely Would Not	Probably Would Not	Might Use	Probably Would Use	Definitely Would Use	No Rating
A. I would contact colleagues at other schools inquiring about possible candidates.	2	0	5	14	32	2
B. I would contact colleagues within my own school inquiring about possible candidates.	1	1	4	15	30	4
C. I would contact directly specific persons that I would like to have on my staff.	2	3	5	11	31	3
D. I would submit a notice of the vacancy to a commercial professional placement service	17	16	12	2	5	3
E. I would submit a notice of the vacancy to an organizational placement service such as those often found at professional meetings and conventions.	3	8	15	14	13	2
F. I would solicit the names of possible candidates from colleagues at professional meetings and conventions.	2	0	5	24	22	2
G. I would place the notice of the vacancy in a commercial newspaper (e.g., *New York Times*).	29	14	3	1	4	4
H. I would place the notice of the vacancy in a professional newspaper or newsletter (e.g., *Bulletin of Dental Education*).	3	2	7	14	27	2
I. I would place the notice of the vacancy in a professional journal in my field.	4	13	12	9	13	4
J. I would place the vacancy notice in a professional newsletter or journal in the social or behavioral sciences (e.g., the *Monitor* or *Employment Bulletin of the American Psychological Association*).	6	8	13	14	13	1

The results of the evaluations are remarkably consistent with the observations made by Caplow and McGee (1958) over 15 years ago (see especially pages 93-117). They concluded that academic recruiting was mostly "open" in theory but in practice was mostly "closed." As may be seen in Table 4, personal contacts with colleagues, either at one's school or other schools are a favored strategy, as are contacts made through meetings at professional conferences and conventions. A surprisingly large number indicated they would contact a specific person directly. Although Caplow and McGee do not deal with this possibility directly, their data showing that previous contact with a department is associated with eventual hiring (p.113), is consistent with these data. The taboos against the use of placement services, described by Caplow and McGee (p. 103) apparently still exist, with the use of commercial newspaper advertisements viewed even more negatively. Organizational placement services, such as those found at professional meetings or conventions fare somewhat better, again consistent with Caplow and McGee's data. When one considers methods E., F, and J., (Table 4) it appears that the recruiting process is still largely "closed." However, there does not seem to be the same reluctance to publicize a vacancy through the medium of a news letter or newspaper within one's field (method H.). Perhaps this reflects a willingness to open the recruiting process somewhat, but to control the availability of the notice. One can readily sympathize with the administrator responsible for recruitment, who attempts truly open recruiting, especially with current academic and economic conditions.

To determine whether there was a differential in the evaluations of the topics listed in Tables 1 and 2, the degrees listed in Table 3, and the means of location and recruitment listed in Table 4, cross-tabulations were constructed with dental schools divided on the basis of (a) presence or absence of a person whose primary responsibility is educational research (b) type of support (public or private) and (c) geographic area (north, south, east and west). These last two categorizations follow the criteria and process employed by Till (1970). The only cross-tabulation that indicated a discrepancy in assigned ratings involved variable (a), above, and item A(b) from Table 1; those schools without an educational researcher rated the importance of the study of human cognitive learning substantially higher than those with such a person on the staff. This may indicate somewhat unrealistic expectations, concerning the impact a research person might have on the learning of a school's students, or, given the number of cross-tabulations, may be an example of a Type I statistical error (a chance configuration of the data). The data indicate a rather consistent perspective among American Dental Schools concerning the topics dealt with on the questionnaire, at least for the three school variables considered in the cross-tabulations.

DISCUSSION

It seems, from the data of the present study, that a rather conventional doctoral level preparation in research methodology, with supporting work in curriculum and instructional materials development, is regarded as optimal preparation by the majority of deans responding. It is also apparent that a number of them view the area of interpersonal relations as a valuable supporting area, as well. As the emphasis in the health professions education continues to shift from the solo practitioner to the management of a health-care team by a clinician, the latter area may well become more and more important.

There seems to be a continuing need for properly-trained persons for roles in educational research in American dental schools. Although there is a definite and understandable preference for the "double doctorate", and a health professions background, the person with the research doctorate, only, has a fairly good competitive edge over a person with a research master's degree only. He faces stiff competition from the person with the combination of a research master's and health profession degree, however. It is apparent that one would be well advised to recruit health professions personnel into a research training program if one wished to place graduates in a health professions setting, at either the master's or doctoral level. One might infer that some form of contact between the training department and a health professions setting should be established, to provide practicum and internship experiences for all students (especially those lacking a health professions background), and to enable graduates to enter the informal network through which much of the location and identification of candidates for vacancies apparently takes place.

Roughly half the dental schools in the United States lack a person whose primary responsibility is "research in the education and training of health professions personnel." Over half those schools indicated at least some interest in recruiting such a person. A number of schools already employing such a person have two or more individuals charged with this responsibility. As the emphasis on improved health care delivery systems and curriculum innovation converges (e.g. the development of the concept of the clinician managing a team of expanded-duties auxiliary personnel, to enable more efficient patient care), the need for properly trained educational research personnel to take the lead in development and evaluation efforts can be expected to accelerate.

A rather interesting validation of the results and conclusions of this study appeared in the December 1975 *Educational Researcher*, in the form of the following advertisement which appeared on page 20. The notice was for an opening at a medical school in the southwest, but it is interesting to note the correspondence between the competencies and background desired and the data of the present study.

> MEDICAL EDUCATION EVALUATOR--This person will serve in a consultant role to the faculty and staff in educational measurement and evaluation, research design, and data analysis. Skills in interpersonal relationships are very important in order to establish productive relations with the faculty. Also needed are skills in the design of instructional packages. Medical school experience not mandatory, but helpful. Doctorate degree required. Send Resume to: ———— ————, Ph.D., Assistant Dean for Education, ———— University School of Medicine, P. O. Box ——, ————, —.

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